Serial No. 09/856,212

IN THE CLAIMS:

Please amend the claims as follows:

Claim 1 (cancelled)

2. (currently amended) ~~The~~ A method for producing a ~~relatively defect free~~ silicon single crystal ingot ~~according to Claim 1,~~under the following conditions:

(a) V/G value from a crystal center position to a crystal outer periphery position = 0.16-0.18 $mm^2/°C$ min,

(b) G outer / G center ≤ 1.10, where V (mm/min) is pulling speed in the Czochralski method, G (°C/mm) is an average value of an in-crystal temperature gradient in a pulling axis direction within a temperature range from a silicon melting point to 1350°C, G outer is a G value on an outer surface of the crystal, and G center is a G value at the center of the crystal,

~~characterized in that~~the method of comprising the step of adjusting said conditions (a) and (b) ~~are adjusted~~ by ~~changing~~ narrowing a distance between a heat shielding element equipped in a Czochralski method-based silicon single crystal production device and a silicon melt along with pulling of the silicon crystal ingot.

3. (currently amended) ~~The~~ A method for producing a ~~relatively defect free~~ silicon single crystal ingot ~~according to Claim 1,~~under the following conditions:

(a) V/G value from a crystal center position to a crystal outer periphery position = 0.16 - 0.18 $mm^2/°C$ min,

(b) G outer / G center ≤ 1.10, where V (mm/min) is a pulling speed in the Czochralski method, G (°C/mm) is an average value of an in-crystal temperature gradient in a pulling axis direction within a temperature range for a silicon melting point ot 1350°C, G outer is a G value on an outer surface of the crystal, and G center is a G value at the center of the crystal,

~~characterized in that~~the method comprising the step of adjusting said conditions (a) and (b) ~~are adjusted~~ by ~~changing~~ decreasing the pulling speed of the silicon single crystal ingot along with

pulling of the silicon single crystal ingot when the silicon single crystal ingot is produced by the Czochralski method.

4. (currently amended) A ~~relatively defect free~~ silicon single crystal wafer with decreased grown-in defects, which is obtained from said silicon single crystal ingot according to ~~Claim 1.~~one of Claims 2 and 3.

5. (currently amended) A ~~relatively defect free~~ silicon perfect single crystal wafer free from grown-in defects, which is obtained from said silicon single crystal ingot according to ~~Claim 1~~one of Claims 2 and 3.

Claim 6 (cancelled)

7. (currently amended) A Czochralski method-based silicon single crystal production device, comprising, in a closed container, a crucible element which stores silicon melt, rotates and is vertically driven, a pulling element for pulling a silicon single crystal ingot, while rotating from said silicon melt, a heating element for heating said crucible, and a heat shielding element for shielding radiating heat from said heating element, wherein the device comprises:

~~a control means for controlling an in-crystal temperature gradient in a pulling axis direction of the silicon single crystal ingot, and~~

a drive mechanism for moving the heat shielding element ~~on the basis of an instruction from the control section~~so that a distance between the heat shielding element and the silicon melt becomes narrower along with pulling of the silicon single crystal ingot.

Claim 8 (cancelled)

9. (currently amended) A heat treating method for a ~~relatively defect free~~ silicon single crystal wafer related to a perfect crystal produced by a Czochralski method, characterized in that a heat treatment temperature at the initial entry of the silicon single crystal wafer to be a target of the heat treatment is 500°C or less, and a temperature ramping rate in a temperature range from the heat treatment temperature at initial entry to an ultimate temperature set in a range of 700°C - 900°C is set to 1°C/min or less.

10. (currently amended) A heat treating method for a ~~relatively defect free~~ silicon single crystal wafer related to a perfect crystal produced by a Czochralski method, characterized in that a heat treatment temperature at the initial entry of the silicon single crystal wafer to be a target of the heat treatment is 500°C or less, and a temperature ramping rate in a temperature range from the heat treatment temperature at initial entry to an ultimate temperature set in a range of 700°C - 900°C is set to 1°C/min or less, so as to make uniform the distribution of an oxide precipitate density of the silicon single crystal wafer after heat treatment.

11. (currently amended) A heat treating method for a ~~relatively defect free~~ silicon single crystal wafer related to a perfect crystal produced by a Czochralski method, characterized in that a heat treatment temperature at the initial entry of the silicon single crystal wafer to be a target of the heat treatment and a temperature ramping rate from the heat treatment temperature at initial entry to an ultimate temperature set in a range of 700°C - 900°C are adjusted so as to adjust the distribution of an oxide precipitate density of the silicon single crystal wafer after heat treatment.

12. (original) The method according to Claim 9, characterized in that the oxygen concentration of the perfect crystal is 13×10^{17} atoms/cm^3 or less.

13. (original) A silicon single crystal wafer produced by the method according to Claim 12.

Claims 14-23 (cancelled)